



REMARKS/ARGUMENT

Claims 22-32 are pending in the present application. Claims 22-32 are rejected. Claims 22, 31 and 32 are amended. No new matter is added.

DISCLOSURE

The specification is objected to for containing browser executable code in contravention of USPTO policy, according to the Office Action. Applicants have amended the specification to remove code that might be considered to be browser executable, and have instead indicated that a web page link is to be inserted in the appropriate location in the example of the code generated by the image map editor. Applicants respectfully submit that the objection to the disclosure should now be overcome, and further respectfully note that the code generated by the image map editor is not intended to be executable, but is provided as an example of the operation of the present invention in accordance with the requirements of 35 U.S.C. §112, first paragraph. Accordingly, Applicants respectfully request that the objection to the specification be reconsidered and withdrawn.

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CLAIM REJECTIONS - 35 U.S.C. §112

Claim 28 is rejected under 35 U.S.C. §112, first paragraph, for lack of enablement, according to statements in the Office Action. Specifically, claim 28 does not teach "filtering the data file prior to the wavelet transform step". Applicants respectfully traverse the rejection.

Filtering a data file is a well known operation used to achieve desired manipulation of the data file contents and produce desired results for representations related to information contained in the data file. Each of the cited prior art references teach some filtering technique. Accordingly, filtering a data file is within the ordinary skill of an artisan in the relevant art.

On pages 14-15 of the description of the present invention various filters are described. Information about the filters is described as being stored in a coded image file, and the filters are selectively chosen prior to image compression. On page 16 of the present invention, the images are described as being optionally in the form of a data file in a variety of storage media. Accordingly, Applicants respectfully believe that the present invention recited in claim 28 provides sufficient description to reasonably permit one of ordinary skill in the art to make and

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use the invention. For this reason, Applicants respectfully submit that the rejection of claim 28 under 35 U.S.C §112, first paragraph is overcome, and respectfully request that it be reconsidered and withdrawn.

CLAIM REJECTIONS - 35 U.S.C. §103

Claims 22-27 and 31-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chui et al. (U.S. Patent No. 5,604,824). Claims 26-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chui et al. and further in view of Ohkuma et al. (U.S. Patent No. 5,845,041). Claim 28 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chui et al. and further in view of Ouyang et al. (U.S. Patent No. 5,835,145). Claim 29 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chui et al. and Ohkuma et al. and further in view of Ito (U.S. Patent No. 5,901,249). Claim 30 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chui et al. and Ohkuma et al. and further in view of Said et al. (IEEE Transactions on Image Processing, Vol. 5, No. 9, September 1996, "An Image Multi Resolution Representation for Lossless and Lossy Compression"). In particular, the Office Action states that in the case of each rejected claim the cited prior art references disclose all the limitations either explicitly, inherently or equivalently, or the limitations are obvious in view of the disclosures of the cited prior art references. Applicants respectfully traverse the rejection.

With respect to claim 22, the Office Action states that Chui et al. disclose each of the elements recited in the claim, and discloses, either inherently or equivalently, compression of a file. Applicants have amended claim 22 to specifically point out several features of the present invention that are not disclosed or suggested by Chui et al. In particular, claim 22 now recites that the data file that is the subject of the compression method has data elements that are each represented by a number of bits, and that performing a wavelet transformation according to the techniques disclosed in the present invention produces wavelet coefficients represented by a number of bits that are not greater in number than the greatest number of bits representing any given one of the data elements in the data file. This central feature of the present invention is disclosed in none of the cited prior art references, including the disclosure by Chui et al.

Indeed, each of the disclosures cited in the Office Action discuss techniques for wavelet transforms that require at least twice the number of bits to represent wavelet coefficients, than were used to represent elements of an input data file. None of the cited references, including that by Chui et al., disclose or suggest that the number of bits representing the wavelet coefficients in a wavelet transformation can be limited to the number of bits representing each of the data elements in the input data file.

Because none of the cited prior art references, including that by Chui et al., disclose the feature of a limitation on the number of bits representing wavelet coefficients, Applicants respectfully submit that the present invention recited in claim 22 contains limitations not shown or suggested in the prior art. Since the prior art does not teach all of the limitations recited in the present invention of claim 22, Applicants respectfully submit that claim 22 should be allowable over the cited prior art references. MPEP §2143.03. Applicants therefore respectfully request that the rejection of claim 22 under 35 U.S.C. §103(a) be reconsidered in view of the above discussion, and respectfully requests that the rejection be withdrawn.

Claims 23-30 depend upon and further limit claim 22, while including all of the subject matter of claim 22. Accordingly, claims 23-30 are thought to be allowable for this reason, and for the additional subject matter recited in each claim. Applicants therefore respectfully request that the rejection of claims 23-30 under 35 U.S.C. §103(a) be reconsidered and withdrawn.

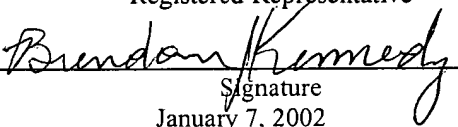
Claims 31 and 32 are amended to recite specifics of the wavelet transformation that are undisclosed in any of the cited prior art references. Accordingly, Applicants respectfully believe that claims 31 and 32 are allowable over the cited prior art of record, including the disclosure by Chui et al., for the same reasons that are discussed above with respect to claim 22. Applicants respectfully believe that claims 31 and 32 are patentable over the cited prior art references, including the disclosure by Chui et al., and Applicants respectfully request that the rejection of claims 31 and 32 under 35 U.S.C. §103(a) be reconsidered and withdrawn.

CONCLUSION

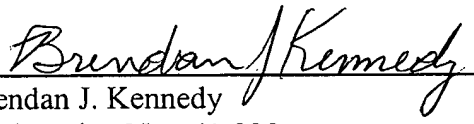
Applicants respectfully believe that the foregoing is a complete and accurate response to all issues raised in the most recent Office Action. In view of the above discussion and

amendments, Applicants respectfully believe that the present application is now in condition for allowance, and earnestly solicits notice to that effect. If it is believed that an interview would contribute to allowance of the claims, the Examiner is requested to contact the undersigned counsel at the number provided below.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231, on January 7, 2002:

Brendan Kennedy
Name of applicant, assignee or
Registered Representative

Signature
January 7, 2002
Date of Signature

Respectfully submitted,


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APPENDIX B

VERSION WITH MARKINGS TO SHOW CHANGES MADE
37 C.F.R. § 1.121(b)(iii) AND (c)(ii)

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SPECIFICATION:

Paragraph at page 1, line 29 to page 2, line 2:

In addition to imaging systems, compression technology can be incorporated into "video on demand" systems, such as video servers. Compression technology can also be applied to streaming video, which is the real-time capture and display of video images over a communications link. Applications for streaming video include video telephones, remote security systems, and other types of monitoring systems.

Paragraph at page 4, line 18, to page 4, line 22:

According to another aspect of the present invention, a compression method is provided that allows user selected portions of an image to be compressed to different image qualities, [whereby] thereby permitting non-uniform image compression.

Paragraph at page 16, line 1 to page 16, line 10:

The image source 72 may be a digital still image or video source, such as a CD-ROM drive, scanner, or network connection. In addition, the image source [85] 72 can include analog video sources, such as a video camera, VCR, television broadcast or cable receiver. The analog video signals would be converted to a digital form by the image source [85] 72 using conventional conversion techniques. Alternatively, an image source 72 can include a video camera and communications systems for transmitting real-time video to the I/O subsystem 66.

Paragraph at page 19, line 29 to page 20, line 7:

FIG. 12 illustrates another method of compressing an image in accordance with another embodiment of the present invention. In this method, a user can [selective] selectively vary compression parameters (step 173) to obtain a lossless or near-lossless compressed image at a desired compression ratio. In step 170, the image is input. In step 172, an integer color

transform is performed on the input image. In step 173, compression parameters are selected by the user using a software interface. These parameters can include those described herein below in the subsection title "Peak Signal to Noise Ratio (PSNR) Controlled Compression". In step 174, an integer wavelet transform is performed on the color transformed pixels. In step 176, the wavelet coefficients are entropy coded. Next, in step 178, the compressed image file is then output from the system.

Paragraph at page 24, line 1 to page 24, line 6:

REMARK. Since (2.1)-(2.5) [(2-6)] are not linear because of the rounding operation $\text{Int}(x)$, this means the transformation order becomes significant. For instance, if the decomposition was applied first to the columns and then to the rows, the inverse transformation must be applied first to the rows and then to the columns.

Paragraph at page 24, line 31, to page 25, line 9:

It is known that the general values for the high frequency wavelet coefficients are small, and all higher levels of the decomposition provide generally small values in the high frequency band. This allows the preservation of precision during the computational stage of the wavelet coefficients. Now, the complementary code property, the other aspect of the PPP property, is a well know characteristic of the integer arithmetic as done by the computer. Consider the computation of the difference of two integers given as $c = b - a$ and the inverse computation of $a = b - c$. the nature of the computation within the computer can be specified as follows:

Paragraph at page 33, line 17, to page 33, line 20:

Similarly, if we take $\{h^0, \tilde{h}, g, \tilde{g}^0\}$ as an initial set of biorthogonal filters, a new set of biorthogonal filters $\{h, \tilde{h}, g, \tilde{g}\}$ can be found as [can be found as]

Paragraph at page 45, line 15:

href = "[http://www.infinop.com] [user assigned http link]" ></EMBED>

Paragraph at page B11, line 15, to page B11, line 16:

<EMBED SRC- "cow.cod" type = "image/cis-cod" WIDTH- "257" poly= "44, 45, 103, 78, 103, 86, 54, 86, 54, 78", href = "[http://www.infinop.com] [user assigned http link]"
></EMBED>

Claims:

22. (Amended) A method of compressing a data file having data elements each represented by a number of bits, comprising [the steps of]:

performing a wavelet transformation of the data file to provide a series of wavelet coefficients, each of said coefficients being represented by a number of bits having a maximum count no greater than a number of bits representing each of said data elements;

quantizing those wavelet coefficients which fall above a predetermined threshold value to provide a quantized series of wavelet coefficients; and

compressing the quantized series of wavelet coefficients to provide a compressed data file.

31. (Amended) A compressed data file comprising:

a wavelet transformation of a data file;

[having] a series of compressed, quantized wavelet coefficients included in said wavelet transformation;[,]

[the] said quantized wavelet coefficients having a value above a predetermined threshold value to provide a quantized series of wavelet coefficients; and

said quantized wavelet coefficients each being represented by a number of bits not greater than a number of bits representing individual data elements of said data file.

32. (Amended) A program for compressing a data file having data elements each represented by a number of bits, comprising:

a routine for performing a wavelet transformation of the data file to provide a series of wavelet coefficients, each of said coefficients being represented by a number of bits having a maximum count no greater than a number of bits representing each of said data elements;

a routine for quantizing those wavelet coefficients which fall above a predetermined threshold value to provide a quantized series of wavelet coefficients; and

a routine for compressing the quantized series of wavelet coefficients to provide a compressed data file.